THE
TRAINING SCHOOL BULLETIN

OCTOBER 1919

School Records as an Indication of Mental Subnormality

Theron C. Stearns, M. D.

In the course of the study of a case of juvenile delinquency a card, of which the following is a copy, was found among the records of the School Superintendent's office.

Principal's Report for Examination. School No. ——.

Age, *14*. Grade, *Special V*. No. Years in School, *8*. Date, *2/22/17*.

Ability:

a. Reading, equal to grade *3B*.
b. Number, equal to grade *2B*.
c. Writing, equal to grade *3B*.

Temperament:

a. Obedient—*No*.
b. Quarrelsome—*Yes*.
c. Mischievous—*Yes*.
d. Clean—*Fair*.
e. Oother traits—*Passionate*.

The psychological examination resulted in the report "Defective, five years retarded." In several other instances the school report corresponded so exactly with the report of the psychologist that the attention of the writer was attracted to the fact and to the question of the possibility of finding in the routine records of the schools similar evidence of subnormality among the pupils.

A monthly report made in all the schools indicates the standing of each pupil as to deportment, proficiency and effort, and the rating is indicated by the letters A, B, C and D. The number of times late and the days absent are also indicated, and while the age is available, I believe it is not generally stated on the card sent to each parent.

In the copy given below 30 points were assigned to rating D, 20 were assigned to C and 10 to B. For each year of the child's age above 9 an additional 10 were added to the score. If under age for his grade, 10 points were subtracted. For each time late and for each half day absent an additional 10 were added. The total was subtracted from 100, giving the indicator. The mode of rating is far from perfect, but for practical purposes proved quite sufficient to show the children in need of attention. If we could also have the weight and height, our figures would be much more reliable, and the assignment of better relative figures for the different factors, which should be done by a competent psychologist, would make possible a much more sharply defined indicator as between the several types. But for our immediate purposes we do not require sharply defined indications. Whatever value we give to the several factors, if we use the same values throughout we are able to designate the children who require attention, and thus facilitate the work of the psychologist, the doctors and the nurses. When correct values are assigned by competent psychologists to the several factors and when we have the two additional ones of height and weight, I believe we shall be able to show more exactly the relative mental and physical condition of each child in the school. When we are able to do that, the world will awake to the necessities in connection with this subject.

As shown below, we have one individual in the class of 50 making 100 plus. This is the supernormal individual of whom we find almost exactly 1 in 100 in the classes thus far examined. This one deserves our attention even more than the subnormals, because such individuals should be given facilities for the development of their superior abilities.

Of the several groups, 5 mark 100; 8, 90; 10, 80; 5, 70; 5, 60; 3, 50; 3, 40; 3, 30; 2, 20, and 3, 10. Then follow 1 marking minus 20 and 1 marking minus 30.

So far as the investigations of the writer have proceeded to this date the two last designated individuals would prove upon full investigation to be feeble-minded. However the classification may come, under more competent hands, to be designated, we have twelve groups of children, ranging from normal to several degrees of subnormality. With the easily available monthly record, either with or without the desired additional factors of weight and height, the work of the restricted number of available psychologists in the Jersey City schools could be greatly facilitated, and the duty the State owes to

the subnormal groups would be better defined and emphasized.

The above plan was submitted to the Director of the Research Department, Vineland, who made the following suggestions and comments:

"A total of 15 points might be deducted under "effort," 5 points for rating B, 10 for C and 15 for D. Under "proficiency" deduct a total of 30 points, as outlined in the original plan. Under "deportment" a total deduction of 15 points might be made as for "effort." "Times absent or late" might be brought under one heading, and a total of 10 points deducted, 5 points for absences or late arrivals up to two in number, 10 points if over that number. The plan of deducting 10 points for each year of over age for grade and the addition of 10 points to the final rating for each year under age might stand.

This means that the deductions could not total more than 100 unless the child were more than three years over age for his grade.

The advantages of such a method of scoring would be several. Undue weight could not be attached to absences or late arrivals, which might be entirely due to the fault of the parents. Proper emphasis would be placed upon "proficiency" where it appears to belong. It would be almost impossible for the child to receive a minus rating, which would be a statistical advantage. Finally, any child rating below 70 points could justly be held "suspect" and subjected then to special examination. Such a rating would correspond well with the proposed normal limits of intelligence quotients as determined by mental tests and could easily admit of correlation therewith.

In this way a child two years over age for grade and at the same time ranking C in proficiency in this low grade would very probably be defective. A child one year over age, but losing 10 points for absences, 10 for effort and 10 for proficiency might easily be physically defective. In either of the cases above, the need for individual examination is indicated. Special conditions needing attention might be indicated by marking the child's record in red ink with a plus; for instance, if the child's absences from school are frequent, the reason assigned by the parent being ill health, such a method of marking would call the attention of the school physician. Incorrigibility might be indicated by a red ink marking under deportment.

The plan as outlined commends itself to me as an admirable use of systematized school records, which would prove useful in very many ways, in addition to being an aid to diagnostic selection."

The above suggestions will be adopted for the reports which we shall examine, beginning with the first month of the present school term. It is to be understood that I am not presuming to offer a method for the differentiation of normal and subnormal children, for which so many better methods exist. What we are trying to do is to utilize the easily available monthly school report for the early recognition of cases, not only of mental deficiency, but also of the remainder of the physically defective children, in the hope that we may by this means secure better treatment than now obtains for these children, especially in the large cities. We should thus be able to ultimately arouse public interest in this important subject and to obtain suitable treatment for the large number of children now receiving no attention, and who through our neglect are destined to a life of poverty, want, and in many instances crime.

"Scattering" in the Binet-Simon Tests

E. A. Doll

Psychologist, State Department of Institutions and Agencies, New Jersey.

Six years of experience with the Binet-Simon Measuring Scale have taught us that there are some important characteristic differences between the reactions of normal and feeble-minded children. These differences are both quantitative and qualitative. They constitute important aids in the mental diagnosis of borderline cases, and they afford direct insight into the psychology of feeble-mindedness.

The analysis of these differential reactions is the basic problem in a study of the mental development of the feeble-minded. The only phase of this problem which can be presented convincingly at this time is that phase which treats of the typical distribution of tests passed and failed in individual Binet-Simon examinations. This distribution is commonly known as "scattering," and signifies the range of mental years in which a subject passes individual tests. When supplemented by a study of the nature of the tests failed within this range, scattering may afford definite assistance in diagnosing borderline feeble-mindedness.

Clinicians who deal with large numbers of feeble-minded children have discovered in an empirical way that mental defectives scatter more than normals in the Binet-Simon tests. At the Vineland Laboratory we have also observed that there are different forms of scattering for the clinical varieties of feeble-mindedness. This is most

striking in feeble-mindness combined with epilepsy and with insanity. It is somewhat less striking with the "accidentally" feeble-minded, and is least apparent with the hereditary feeble-minded. In particular we have sought to make diagnostic use of the significance of scattering in cases of potential feeble-mindedness, that is to say, with those young borderline cases who ultimately prove to be feeble-minded, but who when examined early in life, before arrest of development is complete, fail to show any serious intelligence retardation.

It is one thing to observe scattering empirically, but quite another to present convincing statistical proof thereof. The problem is very complex, involving, as it does, so many departures into standardization criteria. The method of proof which we have employed consists merely in determining what percentage of cases in any chronological or mental age group of subjects pass any one, any two, any three, four or five tests at each Binet-Simon mental year. For example, by a revised standardization of the scale a normal child of six years passes all of the tests at mental years IV, V and VI, three tests at VII, and none beyond, He has, therefore, a basal year of 6 and three additional points. His mental age is 6.6, and his I.Q. is 100. But a feeble-minded child of mental age six passes only four tests at V, four at VI, three at VII and one at VIII. He has, therefore, a basal year which is two years behind his mental age, and consequently scatters over a wider range of tests than does the normal child of the same mental age.

In estimating scattering, it is necessary that the arrangement of the tests upon which the computations are based should be accurately standardized. If the scale of tests is not correctly standardized, one finds a type of scattering which is fallacious and misleading. But a close study of the several standardizations of the Binet-Simon Scale revealed that no published arrangement of these tests was sufficiently accurate for a study of scattering. The disagreements between the arrangements of the tests by different authors could be traced to more or less obvious differences in choice of subjects, procedures in giving the tests, standards of scoring, and the like. But the inconsistencies in specific arrangements of the tests by each author were due to a variable criterion of standardization. We were therefore obliged to develop an arrangement of the tests, suited to our purposes.

For the study of scattering it is also necessary that all the tests be arranged in the order of difficulty as well as in mental years. For

this purpose we experimented with six different standardization methods. The most difficult obstacle encountered was that the order of difficulty was not the same for successive years. This is presumably due to the fact that when an ability is being acquired, but is not fully mastered, other new acquisitions interfere to some extent so that there are temporary compensating losses for gains. The equalization of these fluctuations in relative difficulty was accomplished by distributing the tests in an order of difficulty arranged for a succession of years instead of for individual years. This revised arrangement of the tests is as follows: It is based on selected normal children of both sexes with an I.Q. range of 90-110. The number of cases is very small, about 15 or 20 at each age, but this is offset by the homogeneity of the group and the care with which the individual tests were made. Only complete wide-range results were used.

From the standardizations obtained by these different methods we may draw several conclusions.

1. The orders of difficulty obtained by the different methods of approach are almost exactly identical.
2. The summation of per cents is the simplest accurate method of deriving this order, but does not directly yield a year scale.
3. The Otis method gives an exact and reliable order of difficulty, but the year standardizations are too low. This error is due to a failure to relate the per cent of passing to the correlation between tests. This can be corrected so as to yield a standardization which shall be accurate both for year values and for order of difficulty.
4. The present scale, both Bine 1911 and Goddard 1911 arrangements, is open to the criticism that a few tests are incorrectly placed by years. There are, for example, too many tests which standardize at mental year V and too few at mental year VIII. This error can be corrected by minor changes in the standards of scoring or by changes in procedures, or by substitution. Nevertheless, for practical purposes both of these revisions are highly accurate, for by these finer methods of standardization no single test is misplaced by more than one year. This error is well within the errors of examination or of personal equation as demonstrated by Brigham.

With this revised arrangement of the Binet tests we have computed the median scattering for mental ages five to ten. From the

TABLE I.—REVISED STANDARDIZATION OF BINET-SIMON TESTS IN ORDER OF DIFFICULTY FOR NORMAL AND FEEBLEMINDED SUBJECTS.
NORMAL SUBJECTS

TABLE I.—REVISED STANDARDIZATION OF BINET-SIMON TESTS IN ORDER OF DIFFICULTY FOR NORMAL AND FEEBLEMINDED SUBJECTS.

NORMAL SUBJECTS

Ment Age Gr'p	No. Cases	Av. Ment Age	Av. Life Age	Av. I. Q.	V					VI					VII					VIII				
					*1 †5-4	2 5-1	3 5-3	4 6-5	5 6-1	1 5-2	2 6-2	3 6-3	4 7-1	5 5-5	1 7-5	2 7-3	3 7-2	4 6-4	5 7-4	1 8-1	2 8-3	3 8-5	4 8-4	5 8-2
5	9	5.5	5.4	101	89	78	67	67	89	56	67	56	44	11	22	22	33	11	0	11	0	11	0	0
6	14	6.4	6.2	103	100	93	100	93	79	100	86	79	93	86	64	64	43	57	43	7	14	7	0	0
7	23	7.3	7.4	99	100	100	100	100	91	100	96	100	91	100	100	91	83	78	78	74	39	39	30	9
8	17	8.3	8.4	99	100	100	100	100	100	100	100	100	100	100	100	100	94	94	100	94	88	71	53	59
9	11	9.4	9.6	99	100	100	100	100	100	100	100	100	100	100	100	100	91	100	100	100	100	100	91	91
10	14	10.4	10.4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	93	93
Total sum of per cents					589	571	567	560	559	556	549	535	528	497	486	477	444	440	421	386	341	328	267	252

FEEBLEMINDED SUBJECTS

5	31	5.4	20.2		81	55	48	29	74	58	87	74	19	52	32	19	45	13	13	6	13	13	0	0
6	35	6.3	18.9		100	71	69	60	91	94	94	97	57	71	71	60	69	40	23	31	49	29	0	0
7	39	7.4	21.0		100	90	97	97	100	97	100	97	90	95	90	69	85	77	72	74	90	44	10	8
8	38	8.4	19.3		100	100	97	97	97	100	100	100	100	100	87	95	97	92	82	100	95	55	50	32
9	21	9.3	20.4		100	100	100	100	100	100	100	100	100	100	100	95	100	95	95	95	100	81	71	81
10	25	10.4	23.1		100	100	100	96	100	100	100	100	100	100	96	100	100	100	96	100	100	100	100	96
Total sum of per cents					581	516	511	479	562	549	581	568	466	518	476	438	496	417	381	406	447	322	231	217
Differential difficulty					—8	—55	—56	—81	+3	—7	+32	+33	—69	+21	—10	—39	+52	—23	—40	+20	+106	—6	—36	—35

NORMAL SUBJECTS

Ment Age Gr'p	No. Cases	Av. Ment Age	Av. Life Age	Av. I. Q.	IX					X					XI					XII				
					*1 †9-1	2 9-3	3 9-4	4 9-5	5 10-5	1 10-3	2 11-4	3 10-2	4 10-1	5 9-2	1 11-1	2 11-2	3 11-3	4 10-4	5 11-5	1 12-4	2 12-1	3 12-5	4 12-2	5 12-3
5	9	5.5	5.4	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	14	6.4	6.2	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	23	7.3	7.4	99	4	0	4	13	0	4	4	4	0	17	0	0	0	0	0	0	0	0	0	0
8	17	8.3	8.4	99	47	53	18	65	18	0	18	12	12	24	0	0	6	6	0	0	0	0	0	0
9	11	9.4	9.6	99	91	91	100	55	73	91	55	36	36	0	27	27	9	18	0	18	18	0	0	0
10	14	10.4	10.4	100	100	93	100	79	100	64	79	79	71	64	71	71	64	50	64	29	21	7	0	0
Total sum of per cents					242	237	222	212	191	159	156	131	119	105	98	98	79	74	64	47	39	7	0	0

FEEBLEMINDED SUBJECTS

5	31	5.4	20.2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	35	6.3	18.9		0	0	0	0	0	11	0	0	0	6	0	0	0	0	0	6	6	0	0	0
7	39	7.4	21.0		8	13	26	13	3	8	5	10	8	8	0	0	3	3	0	5	3	0	0	0
8	38	8.4	19.3		21	50	63	37	18	32	26	24	24	13	16	11	8	21	0	29	11	0	0	0
9	21	9.3	20.4		48	91	95	33	62	33	43	24	48	52	38	29	29	43	19	19	5	14	5	0
10	25	10.4	23.1		92	92	92	56	96	88	64	32	76	40	72	64	56	84	76	32	40	20	20	4
Total sum of per cents					169	246	276	139	179	172	138	90	156	119	126	104	96	151	95	85	59	34	25	4
Differential difficulty					—73	+9	+54	—73	—12	+13	—18	—41	+37	+14	+28	+6	+17	+77	+31	+38	+20	+27	+25	+4

* Revised Order.
† Goddard Order.

individual records we computed the per cent of subjects at each mental age who passed one, two, three, four and five tests at each mental year. This was done for both normal and feeble-minded subjects. The median type of distribution was then derived by combining the tests passed by 50 per cent or more of the cases at each mental age group.

The results may be interpreted briefly as follows: The median normal child of mental age nine, for example, has a basal year of VIII and passes four tests at IX, two at X, and one at XI, whereas the median feeble-minded child of mental age nine has a basal year of VII, passes four tests at VIII, three at IX, two at X, and two at XI. The feeble-minded child, therefore, obtains his points of credit from a greater range of tests than does the normal child of the same intelligence level, that is to say, he scatters more. This fact is much more obvious from an examination of the exact percentages instead of the median types.

The scattering of normals in the tests is a direct result of the method of standardization and the individual differences which characterize the development of intelligence. The greater scattering of the feeble-minded arises from the fact that the standard order of difficulty of the tests for normal children is not the order of difficulty for mental defectives. Just why these differences exist is a most important problem in the psychology of feeble-mindedness.

We employed several methods to discover which tests were comparatively difficult for defectives and which were comparatively easy. Of these methods the one which gave the most satisfactory results was suggested by Dr. Carl Brigham. This consists in subtracting the sum of per cents of normal subjects passing each test from the similar sum of per cents for feeble-minded subjects. If the sum of per cents for a given test is greater for normals, then, obviously, that test is easier for them. The amount of difference between sums of per cents for the two groups on each test is a measure of the tests' comparative difficulty. For example, comparing two weights is passed by a total sum of 571 per cents of all our normal children, but by only 516 per cents of defectives. This particular test is therefore considerably more difficult for defectives than for normals. Consequently, by examining the specific tests failed by a borderline feeble-minded subject one is able to establish a suspicion of feeble-mindedness even when mental defect is not apparent by I.Q. or by mental age retardation.

TABLE II.—SCATTERING OF NORMAL AND FEEBLEMINDED SUBJECTS IN REVISED ARRANGEMENT OF BINET-SIMON TESTS, SHOWING THE PER CENT. OF SUBJECTS IN EACH MENTAL AGE GROUP WHO PASS ANY 1, 2, 3, 4 OR 5 TESTS OF EACH MENTAL YEAR.

Ment. Age Gr'p	No. Cases	Av. Ment. Age	Av. Life Age	III					IV					V					VI					VII				
				1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
5	9	5.5	5.4			100	100	100	100	100	100	100		100	100	78	67	44	100	78	44	11	0	56	22	11	0	0
5	31	5.4	20.2			100	97	84	100	100	100	61		97	90	61	32	6	100	100	58	32	0	84	32	6	0	0
6	74	6.4	6.2				100	100	100	100	100	100		100	100	100	93	71	100	100	93	86	64	100	100	57	14	0
6	35	6.3	18.9				100	91	100	100	100	80		100	100	97	60	34	100	100	94	86	34	97	89	60	14	3
7	23	7.3	7.4											100	100	100	100	91	100	100	100	100	87	100	100	100	87	44
7	39	7.4	21.0											100	100	100	100	85	100	100	100	97	82	100	100	95	69	28
8	17	8.3	8.4														100	100	100	100	100	100	100	100	100	100	100	88
8	38	8.4	19.3														100	92	100	100	100	100	100	100	100	100	89	63
9	11	9.4	9.6														100	100	100	100	100	100	100	100	100	100	100	91
9	21	9.3	20.4														100	100	100	100	100	100	100	100	100	100	100	86
10	14	10.4	10.4														100	100	100	100	100	100	100	100	100	100	100	100
10	25	10.4	23.1														100	96	100	100	100	100	100	100	100	100	100	92

Ment. Age Gr'p	No. Cases	Av. Ment. Age	Av. Life Age	VIII					IX					X					XI					XII				
				1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
5	9	5.5	5.4	22	0	0	0	0																				
5	31	5.4	20.2	23	6	3	0	0																				
6	74	6.4	6.2	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
6	35	6.3	18.9	80	23	6	0	0	0	0	0	0	0	14	3	0	0	0										
7	23	7.3	7.4	96	61	30	4	0	17	4	0	0	0	26	4	0	0	0	0	0	0	0	0	0	0	0	0	0
7	39	7.4	21.0	97	82	41	5	0	44	15	3	0	0	33	5	0	0	0	5	0	0	0	0	8	0	0	0	0
8	17	8.3	8.4	100	100	88	53	24	94	65	18	18	0	65	18	0	0	0	12	0	0	0	0	0	0	0	0	0
8	38	8.4	19.3	100	100	87	45	0	97	61	26	5	0	84	32	3	0	0	45	11	0	0	0	34	5	0	0	0
9	11	9.4	9.6	100	100	100	100	82	100	100	100	73	36	100	73	36	9	0	64	18	0	0	0	36	0	0	0	0
9	21	9.3	20.4	100	100	95	91	43	100	100	86	38	5	95	62	33	10	0	71	52	29	5	0	38	5	0	0	0
10	14	10.4	10.4	100	100	100	100	86	100	100	100	93	79	100	100	86	43	29	100	93	71	13	14	50	7	0	0	0
10	25	10.4	23.1	100	100	100	100	96	100	100	96	96	36	100	96	72	32	0	100	100	92	48	12	88	28	0	0	0

If one chooses to analyze the nature of the intellectual processes involved in the tests which show striking ease or striking difficulty for the defectives, one may evolve on the basis of these tests some valuable results for the psychology of mental defect. But this analysis is no easy matter. The apparent content of a mental test is not always the real content. Indeed, the psychological character of a mental test may change very subtly at different age levels. For example, to cite an absurd extreme, the ability to walk is a good indication of intellectual development in babies between one and two years of age, but no one would attempt to standardize gait as a measure of adult intelligence. Similarly, the intellectual processes involved in the repetition of digits, for example, depend upon age-level and the number of digits used. To repeat three digits is a good test of intelligence with four-year-old children; it puts a minimum of emphasis on memory span and a maximum on intellective adaptation. But the ability to repeat six, seven or eight digits is not necessarily a good test of intelligence, for at the age where this test could be passed the intellective adaptation is at a minimum and the memory span at a maximum. Such inferences are revealed by our figures. The repetition of five digits proved a slightly more difficult test for defectives than for normals, whereas six digits was comparatively an easy test, and seven digits was comparatively still easier. Speaking broadly, the tests which put a premium on memory processes or experience are found among the tests which are easy for the defectives. On the contrary, those tests which involve new adaptations or abstract judgments are characteristically hard for defectives. It seems to us that the careful analysis of results on these principles will yield valuable insight into the problem of the qualitative difference between normal and feeble-minded children. For this purpose the experimental data must be very reliable.

We have made still further use of this fact of the unequal difficulties of the Binet-Simon tests for defectives. Following a suggestion from Dr. Brigham we have constructed a brief scale for rapid examining. This scale is derived by selecting those tests which are especially difficult for defectives, and which standardize definitely at certain mental years. This selection is based on the assumption that those tests are best suited to detect feeble-mindedness which show the greatest differences between known groups of normal and defective subjects. The tests in this brief scale standardize at about one year later for defectives. We have applied this scale to the complete data of our two groups of subjects, and have found that the mental ages obtained by the brief scale are almost fully as reliable as those obtained

with the complete scale. The Pearson coefficients of correlation between the mental ages obtained by the brief scale and those by the complete scale are r = .90, for the feeble-minded subjects, and r = .98, for the normal subjects. We have also subjected this brief scale to the practical test of rapid school-room examining with most satisfactory results. Such a scale is very helpful in rapid preliminary examinations intended to select the more obvious defectives, or to obtain approximate mental ages.

The results which I have so hastily presented must not be accepted as final. Thus far in our study we have been forced to evaluate methods and to discover tendencies. Probably the results are of more interest to science than to technology, but subsequent study along these lines will prove highly profitable.

*TABLE III

SUMMARY SHOWING BASAL YEARS AND SCATTERING FOR EACH MEDIAN AGE GROUP NORMAL AND FEEBLE-MINDED SUBJECTS.

Median	=	IV	=	+4 +2 +1	=	4^{7}	=	5.4
Median	=	IV	=	+3 +3 +1	=	4^{7}	=	5.4
Median	=	VI	=	+3	=	6^{8}	=	6.6
Median	=	IV	=	+4 +4 +3 +1	=	4^{12}	=	6.4
Median	=	VI	=	+4 +2	=	6^{6}	=	7.2
Median	=	VI	=	+4 +2	=	6^{6}	=	7.2
Median	=	VII	=	+4 +2 +1	=	7^{7}	=	8.4
Median	=	VII	=	+3 +2 +1	=	7^{6}	=	8.2
Median	=	VIII	=	+4 +2 +1	=	8^{7}	=	9.4
Median	=	VII	=	+4 +3 +2 +2	=	7^{11}	=	9.2
Median	=	IX	=	+3 +3 +1	=	9^{7}	=	10.4
Median	=	VIII	=	+4 +3 +3 +1	=	8^{11}	=	10.2

* This table should be read in conjunction with Table II.

A Standardized Information Record

S. D. Porteus

Director Research Department, Training School, Vineland.

A great majority of institutions for feeble-minded appear to exercise very commendable care in the gathering of information relative to the condition of their inmates. Examination records which are provided in some places are indeed imposing. In some cases the number of items of information supposed to be recorded runs to over

300 and is seldom less than 100. The form of the questions does not appear to vary much with either time or locality. Apparently the same class of information which was sought twenty-five years ago is still being patiently and laboriously collected.

Admittedly, some of the questions asked have an immediate practical application. It is undoubtedly useful in an institution which possesses buildings of more than one story in height to know whether the patient goes up or down stairs easily, although there is little doubt that such an ability, if present, will not be kept hidden under a bushel. Again, consideration for the other inmates, and possibly the attendants, may be the reason for the query, "Is the patient ever profane?"

Quite a number of institutions, wishing no doubt to anticipate the desires of the patient, are careful to ask whether he eats garbage or uses tobacco, opium or liquor. Other very special inquiries are, "What are his table habits?" and "Is he religiously inclined?" Other questions are evidently formulated for the purpose of aiding scientific inquiry. Several institutions appear to attach much weight as regards the etiology of feeble-mindedness, to the occupation of the parent, and particularly to the circumstance that the father has or has not been in the United States army or navy. The mental acquirements of the candidate for admission are similarly subjected to rigid scrutiny. One almost wonders whether the following list of questions, actually taken from admission blanks, is directed towards examining the patient's mental condition or the parent's.

1. "Does he read words by sight? How many?"
2. "Can he count? How many?"
3. "Can he write his name? How much more?"
4. "Can he spell? Give a list of hard words that he *cannot* spell."
5. "Can he play on any musical instrument, and what? To what extent?"

It is quite clear that if these questions are to be conscientiously answered by the parent, the latter might easily find occupation for his old age, but it would be decidedly easier for him to apply for admission to the institution along with the child. Of course, these questions may really be intended as a very subtle test of the parent's mentality.

Other institutions appear to spend much effort in obtaining family histories. As an example, one record purports to show "for

parents and grandparents, and any other blood relatives of the patient's," whether they had "syphilis, gonorrhea," or "any of the following conditions, specifying and giving details"—"drug habit, vagrancy, special peculiarities of mind and body, hypochondria, sex perversion, defect of sight, hearing or speech (stating whether congenital or acquired), meningitis or brain fever (stating at what age), spasms or convulsions, chorea, hysteria, neurasthenia, paralysis, other nervous types or conditions, apoplexy, heart diseases, sudden death (sic), diphtheria, typhoid, scarlet fever, smallpox, goiter, other severe diseases or defects, serious operations, confinements in hospitals or institutions (what and why), miscarriages (number and cause), and in addition whether any were tuberculous, criminal, illiterate, indigent, insane, epileptic or feeble-minded or sexually immoral.

Surely the camel would have a much easier time passing through the eye of the needle than any family which should try to escape such a probing. How distressing if one should find, in searching among the records of his blood relations for a few generations back, that "sudden death" ran in the family!

The trouble with such a list as the above is that it is either too long or not long enough. Any up-to-date medical dictionary would show a far longer list of the ills that human flesh is heir to, and for the omission of which from this list there appears no sufficient justification.

Of course, the connection of such facts with research is quite obvious. But other inquiries have a reason not quite so apparent, as, for instance, the child's grandmother's maiden name, date and place of birth. The purport of questions with regard to instrumental delivery, character of labor, number of miscarriages, etc., the number in family and the order of birth is sufficiently plain, but the question is whether this information when gathered is ever put to use. Where, for instance, are the statistics with regard to the association of instrumental delivery to feeble-mindedness? Again, for scientific purposes, no one would consider family history gathered in the way illustrated above to be of much value. If, then, accurate information cannot be obtained, or if when obtained we do not know what to make of it, why keep up the meticulous pretense of attempting to gather it? Probably every long-established institution has piles of admission blanks carefully docketed which nobody intends ever to look at. Even supposing one were misguided or feeble-minded enough to make the

summarizing of statistics from such piles the subject of serious research, several troublesome circumstances would impede him. The information he needs would be included among a mass that is quite irrelevant. In the second place, do many institutions keep as careful a record of the children's histories after they have undertaken their care as the parents are expected to provide beforehand? Is there any systematic entry regarding improvement in specific abilities? Would not the full history of the patient be found scattered throughout three or four separate forms and choked up with heaps of irrelevant details? If this is true, is it not then time either to systematize our record-keeping or to give the latter up all together.

As the aim of this paper is constructive, we venture to submit an attempt at a systematized selective record form. In arranging this record we have endeavored to keep some desiderata in view.

1. The information which may be the subject of possible scientific inquiry has been separated as far as possible from that which is required for the institution's immediate purposes.

2. All this information has been collected in one folder instead of on single separate forms. The information recorded is capable of easy interpretation, and to a large extent of statistical summation. Wherever possible graphical representation has been provided for.

3. Scales of development have been arranged for use with the folder so that the proficiency of the individual can be accurately estimated.

4. Within the one folder are provided records of the physical, psycho-physical, psychological, educational and industrial development, and the medical, personal and family history of the individual.

In order that the facts pertinent to any specific scientific inquiries can be easily selected and interpreted, all these records are arranged so as to admit of numerical evaluation. This is in many respects an innovation which should be of distinct value. In this way every attempt is being made to save labor in both the recording and subsequent examination of the facts. A too minute or voluminous record will neither be kept nor used.

Page 1 of the folder was designed to give wholly summarized information with as few details as possible. In order to demonstrate arrest of physical development we correlate the brain capacity with the other anthropometric data of height, weight and vital capacity. Doll[1] has shown the inferiority of the defective's psycho-physical capacity as compared with his physical development. The plan fol-

[1]Anthropometry as an Aid to Mental Diagnosis, by Edgar A. Doll. Publication of the Training School, Vineland, N. J.

lowed is to average the defective's percentiles of sitting and standing height and weight (using Smedley's tables), and to compare this with the average of his percentiles of right and left grip and vital capacity. The difference between the averages Doll calls the "physical excess." Similarly, comparison of the percentiles of the brain capacity and head measurements of feeble-minded with the Berry-Porteus normal percentiles[2] shows that marked abnormalities of cerebral development can be demonstrated in the feeble-minded; hence our record shows the brain capacity percentile, the three main cranial indices and their deviation from the normal, and the deviation of any single measurement in terms of its standard deviation . Thus the comparison of head form and brain capacity of the defective with the normal may be easily made. Then follows physical and psycho-physical averages and the physical excess. Binet age and intelligence quotient give an index of learning capacity. The Porteus test age and I. Q. are given because of its correlation with industrial ability and the degree of social fitness of the individual.[3] Because the average of the Binet and Porteus I. Q.'s has been found to correlate more nearly with industrial and social capacity than with either test taken singly, it is therefore of extreme diagnostic value in the high-grade and border-line cases, and it is here recorded. Here also is given the educational and industrial rating of the individual, which is calculated from the data given on page 2 of the folder.

Space is provided for a summary of the mental examination and diagnosis. At one side a "psychogram" allows of a graphic representation, under a uniform system, of all anthropometric, psychological, educational and industrial ratings, on one side being shown percentiles and on the other I. Q.'s.

For purposes of research this systematizing of tabulation is of utmost practical value. Here graphically displayed is the summarized material for very many studies. The relation of brain capacity to bodily stature, of psycho-physical measurements to intelligence, of mental tests to industrial or educational abilities, or of the relation of any single test to any of the other measurements can be seen for the individual case at a glance. Space is provided for ten successive measurements.

Page 4 of the folder contains all the details of the laboratory examinations. Head length, breadth, height, the stature, weight, right

[2] Cephalometry of Feeble-minded, by S. D. Porteus. Reprint from the Training School Bulletin, June, 1919.

[3] Porteus Tests. The Vineland Revision, by S. D. Porteus. Publication of the Training School at Vineland.

and left grip, vital capacity are here recorded. All the details of the Binet examination from year 3 to 14 can be marked and five successive examinations are provided for. Individual test records in Porteus tests may also be recorded for three successive examinations. Form board and other test records are also given here.

Page 2 contains school and industrial records. Ten step scales specially suited for feeble-minded ability have been arranged to measure the proficiency of the child in reading, comprehension, spelling, writing and composition, arithmetic, music, physical training and kindergarten work. The gradations of difficulty have been made specially close and the range of ability tested goes very low. Ten steps cover a range from kindergarten to about fifth grade abilities, and the scales should thus be useful in special school and special class surveys. Otherwise they do not differ in principle from the ordinary educational measurement scale, with perhaps the exception of the comprehension scale, which is on a new plan. The standardization of these scales is being completed and they will be published in due course.

The industrial capacity scale is on an entirely new plan. The attempt is being made to give all the inmates of an institution a comparative numerical rating on the one scale, no matter how various their industrial occupations. To make this possible, a comparison of all the industries and occupations in the institution was made. Ratings were obtained from six people, each of twenty years' institutional experience, who allotted marks to each occupation according to the degree of complexity of the machinery used, manual skill and judgment involved, and, lastly, the degree of responsibility placed on the child to carry on his work unaided. Such a fourfold classification of industries will be seen to be necessary when it is remembered that certain occupations involve almost wholly the use of machinery, while little is left to manual skill; other occupations, such as boot mending, involve little machinery, but require predominantly manual skill and judgment. Again, other occupations are such that they may be closely supervised by an instructor all the time, whilst in others, such as teamwork on the farm, the inmate is left a great deal to his own resources. The markings for each occupation were then summated and averaged. Comparison of the average markings has resulted in a scale of industries in which, for example, farmwork ranks 100 points and basketry 53. The operations in each occupation were then analysed and arranged in a scale of ten steps of increasing difficulty. By

a simple geometrical device the comparative value of an individual rating in any single occupation may be read off at a glance on the industrial scale. In the occupations mentioned above a person capable of doing the fifth step in farmwork will be rated at 50 points in the industrial scale, while an individual who could do the fifth step in basketry would be rated at a little over 25 points in the industrial scale. It will be seen that such a scale enables us to give a numerical value to the work of a person's work in the community life of the institution. It may be said that by this means we measure his lateral growth, or, in other words, the effect of training. Many persons who have reached a full stop in test-age development (vertical height) may continue to acquire ability in many directions. In this way a most important distinction can be made between the individual of ten years' mental age, whose value to the institution community is nil, and another whose mental age may be much lower, and who is an extremely useful worker. The record provides for a graphical representation of the individual's progress in any occupation to which he may be allotted, space being provided as in educational measurements for ten successive records.

The subjective characteristics of the individual are also arranged on a 10-point basis, so that character as judged by school and cottage reports may be also numerically rated.

Page 3 represents an attempt to systematize the recording of the personal history and the medical examination of the child. In accordance with the rest of the folder everything is arranged on a 5 or 10 point basis, yet the underlying principle is different. Marks recorded here give the number of unfavorable factors or circumstances in the life history or conditions of the child, which may have a bearing on diagnosis. Under personal history are four main divisions. Natal and prenatal conditions have five headings: (1) Health during pregnancy. (2) Duration of gestation. (3) Character and duration of labor. (4) Delivery and birth injuries. (5) General conditions. If there is a record of long-continued ill health or worry during pregnancy, if the child was born more than a month before term, if the labor were unduly difficult or prolonged, if the delivery were instrumental, if the general conditions of the child were unfavorable, as, for example, weight below, say, five pounds, or if partial asphyxiation at birth, then each unfavorable circumstance would be counted as one factor against the child's record.

Similarly, under division 2 (Infancy), if the child were artificially fed, did not walk before 2½ years nor talk before 2½ years, or had unclean habits at 4 years, or if the deficiency were noted during the first year of life, then each circumstance would count one point against the child's record.

Other infantile conditions are covered by division 3, which includes the following headings: (1) Fits and convulsions. (2) Nervous diseases. (3) Infectious diseases. (4) Operations and injuries. (5) Malnutrition.

In the same way the home and social history and general interest and abilities of the child as noted by the parent are similarly rated.

As regards family history 2 points each are allotted on the record if relatives of the child within three generations were: (1) Feebleminded, (2) Insane, (3) Epileptic, (4) Paralyzed, (5) Syphilitic, and 1 point where there is a record of any being (1) Nervous and excitable, (2) Tubercular, (3) Sexual, (4) Alcoholic, (5) Criminal. In this way an attempt is being made to weigh and certain circumstances, and in view of the difficulty in obtaining reliable information to limit the number of inquiries.

Similarly, points are allotted in cases where the mother's age at the birth of child is over 40 or under 18 and the father's age was over 55 or under 20 or if the parents were related, and if the child was first or last born. These facts may or may not have much significance, but they may be classed under the heading of unfavorable circumstances.

The medical examination record has nine main divisions, each again with five subheadings. The object is to obtain a numerical index of the physical conditions of the child.

Under eye conditions, for instance, are 5 points for examination: (1) Pupils, accommodation and regularity. (2) Nystagmus or strabismus. (3) Other conditions. (4) Right vision. (5) Left vision.

Ear conditions are somewhat similarly summated. "Nose, mouth and throat" form another division. Under "Heart and lungs" appear palpation, percussion, other lung conditions, tuberculin test, heart sounds, other heart conditions.

Under the heading "Blood" we include pressure, haemoglobin test, blood count, Wassermann and refractive index of serum. It should be understood that the record is not made with the idea of marking an entry against each condition listed. The aim is rather to list or to note only the defective or abnormal conditions. Just what

shall be considered the limits of normality in each of these tests must be left for the physician to determine. It should be remembered also that the latter may record on the personal history chart any facts coming under his own observation, as, for instance, the emotional traits exhibited by the child.

Our suggestions regarding the limits of normality wherever given are merely tentative.

The remaining divisions of the medical examination record are digestive, neuro-muscular, genito-urinal and general conditions. The latter includes asymmetry, nutrition, speech development, skin conditions and automatisms. Space is also provided for an autopsy report.

We believe that our charts contain practically all the pertinent facts. Before completion of our folder an analysis was made of all the available institution records, and it was found that over 80 per cent of the information gathered in any of the other records was covered by our charts, while in addition ours contained very much that was not found elsewhere. On this analysis our claim for standardization rests. The information not recorded on our charts was either irrelevant or of merely local interest to the institution. Although the summation of unfavorable factors as an index of the child's hereditary and environmental conditions is not, of course, susceptible to rigid interpretation, yet we believe that it has distinct advantages. Any systematized measure is better than none, and though to say that a child is in class one, two or three, etc., according to the number of defects or unfavorable conditions noted has no specific meaning, yet, like "mental age," it may come to have real meaning for the purposes of research.

One of the main purposes in mind in the arrangement of the folder is that such a complete life history will serve as a sound basis of correlation with the results of brain examinations of defectives carried on at the Wistar Institute of Anatomy. To Dr. M. J. Greenman, the Director of the latter institution, I am indebted for several suggestions.

Samples of the folder may be obtained by application to the Extension Department of the Training School at Vineland.

"With the exception of moral character, there is nothing as significant for a child's future as his grade of intelligence."—*Terman.*

Donations

Fourth of July Free Fund, Etc.

Amount previously acknowledged		$294 00
Biddle Hiles, Salem		$ 10 00
Helen F. Hill, Vineland		5 00
Mrs. George Hires, Salem		10 00
Mrs. M. E. Hollinshed, Delair		5 00
Mrs. Frank Holman, Newark		1 00
Mrs. Henrietta Hurd, Vineland		5 00
Josephine Hurd, Vineland		5 00
Samuel Humphrey, Phila., Pa.		5 00
Mrs. Clara A. Kimball, Vineland		5 00
Mrs. F. W. Kipper, Wenonah		10 00
Mrs. Anna Lasitschka, Hoboken		5 00
A. W. Lawrence, Elmer		10 00
Mrs. John H. Lovejoy, Clayton		1 00
Eugene MacFarland, Monroeville		5 00
Mrs. John Manthy, Newark		4 00
Mrs. George F. Mapes, Camden		5 00
A. S. Matheson, Hackensack		10 00
Helen Matthews, Scranton, Pa.		5 00
Walter McDougall, Upper Montclair		5 00
Mr. and Mrs. George A. Mitchell, Vineland		10 00
Beulah Morgan, Woodstown		5 00
Mrs. William T. Murphy, Germantown, Pa.		5 00
Mrs. Mary Northrop, Vineland		5 00
Mrs. Mary B. Orr, Brooklyn, N. Y.		5 00
Mrs. M. J. Paulding, Daretown		5 00
Mary J. Paulding, Bridgeton		5 00
Mrs. Robert Porter, Bridgeton		5 00
Madelene Post, New York City		1 00
Mrs. C. G. Potts, Montclair		5 00
Inez Dale Powelson, Camden		5 00
Mrs. Anna C. Parker, Cliftondale, Mass.		5 00
Carrie W. Patterson, Salem		5 00
Mrs. Augustus Reeve, Camden		5 00